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**BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Application Number: 10/757,104
Filing Date: January 13, 2004
Appellant(s): ANDERSON ET AL.

Steven L. Nichols
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed September 19th, 2008 appealing from the Office action mailed March 24th, 2008.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

| | | |
|---|---|---|
| US 7,197,225 | Romo | 5-2003 |
| US 5,088,806 | McCartney | 2-1992 |

| | | |
|---|---|---|
| US 5,903,251 | Mori | 5-1999 |
| US 7,038,654 | Naiki | 8-2003 |
| US 6,847,737 | Kouri | 3-1999 |

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

1. Claims 1, 12-13, 24 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (hereinafter APA) in view of Romo et al. (US 7,197,225).

**With respect to claim 1,** APA discloses, a diffractive light device (DLD) (fig. 1) comprising:

a substrate (150 in fig. 1);

a force plate (140 in fig. 1) disposed on said substrate, said force plate configured to produce an electrostatic force in response to an applied voltage (para. 19 of the original specification);

a pixel plate (110 in fig. 1) supported by a flexure (120 in fig. 1) adjacent to said force plate (clear from fig. 1), wherein a position of said pixel plate is controlled by said electrostatic force and by said flexure (para. 19) coupled to said pixel plate to display a pixel of an image (para. 22); and

a circuit (170, 180 in fig. 1) that generates and applies a voltage to said force plate (para. 21).

APA does not expressly disclose a temperature sensor or compensating the applied voltage based on thermal measurements produced by a temperature sensor.

Romo discloses, a temperature sensor (708 in fig. 12) thermally coupled to an a flexing cantilever (fig. 3, for example), without affecting movement of said cantilever, and outputting a thermal measurement indicative of a temperature of said flexing cantilever, wherein said temperature sensor is configured to produce a temperature compensated voltage in response to a thermal measurement performed by said temperature sensor (col. 9, line 66 – col. 10, line 4).

APA and Romo are analogous art because they are both from the same field of endeavor namely optical MEMS devices operating using electrostatic attraction.

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the temperature sensor and compensation means of Romo in the DLD device of APA.

The motivation for doing so would have been to overcome temperature dependent instabilities (Romo; col. 1, lines 46-48).

**With respect to claim 12,** the only difference between claim 12 and claim 1 is the device is a MEMS device instead of a DLD device. As APA is clearly a MEMS device claim 12 is rejected on the same merits shown above in the rejection of claim 1.

**With respect to claim 13,** APA and Romo disclose, a MEMS of claim 12 (see above).

APA further discloses, a support post (130 in fig. 1) extruding from said substrate; and

a flexure (120 in fig. 1) coupling said pixel plate (110 in fig. 1) to said support post (130 in fig. 1), wherein said flexure is configured to exert a spring force on said pixel plate opposing said electrostatic force (para. 19).

APA does not expressly disclose, that the thermal effect comprises a change in spring force exerted by a flexure on a pixel plate.

Romo discloses, that a thermal effect comprises a change in the actuation force necessary to affect a change in the cantilever (col. 1, lines 46-48; col. 4, lines 23-27; col. 10, lines 1-4).

At the time of the invention it would have been obvious to one of ordinary skill in the art to also compensate the DLD of APA for a change in spring force as taught by Romo.

The motivation for doing so would have been to overcome temperature dependent instabilities (Romo; col. 1, lines 46-48).

**With respect to claim 24,** APA discloses, an image display device comprising:

a system controller (180 in fig. 1);

a variable voltage source communicatively coupled to said system controller (170 in fig. 1); and

an array of DLDs (160 in fig. 1) communicatively coupled to said variable voltage source, each DLD of said DLD array (para. 3) including a substrate (150 in fig. 1),

a force plate disposed on said substrate (140 in fig. 1), said force plate configured to produce an electrostatic force in response to a voltage applied by said voltage source (para. 19),

a pixel plate disposed adjacent to said force plate (110 in fig. 1), wherein a position of said pixel plate is determined by said electrostatic force and a flexure coupled to said pixel plate (para. 19).

APA does not expressly disclose a temperature sensor or compensating the applied voltage based on temperature measurements produced by a temperature sensor.

Romo discloses, a temperature sensor (708 in fig. 12) thermally coupled to an a flexing cantilever (fig. 3, for example), without affecting movement of said flexure, and outputting a temperature measurement indicative of a temperature of said flexing cantilever, wherein said temperature sensor is configured to produce a temperature compensated voltage in response to a thermal measurement performed by said temperature sensor (col. 9, line 66 – col. 10, line 4).

APA and Romo are analogous art because they are both from the same field of endeavor namely optical MEMS devices operating using electrostatic attraction.

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the temperature sensor and compensation means of Romo in the DLD device of APA.

The motivation for doing so would have been to overcome temperature dependent instabilities (Romo; col. 1, lines 46-48).

**With respect to claim 31,** the only difference in scope between claim 31 and claim 1, is the replacement of force plate, pixel plate and temperature with "means for" language. As shown above in the rejection of claim 1, the means provided by Hung,

and Romo are seen as sufficiently equivalent to the Applicant's disclosed structure to satisfy the "means for" language of claim 31. For this reason, claim 31 is rejected on the same merits shown above in claim 1.

2. Claims 2-3, 5-8, 14-16, 18-21, 25-26, 28-29, 32-33, 35-38 and 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (hereinafter APA) in view of Romo et al. (US 7,197,225) and further in view of McCartney et al. (US 5,088,806).

**With respect to claim 2,** APA and Romo disclose, the DLD of claim 1 (see above).

Neither APA nor Romo expressly disclose, an offset voltage generator to generate a temperature compensated voltage.

McCartney discloses, a temperature sensor (52 in fig. 5) thermally coupled to a display device (50 in fig. 5), wherein said temperature sensor is configured to produce a temperature compensated voltage in response to a thermal measurement performed by said temperature sensor (col. 4, lines 18-30), further comprising;

an offset voltage generator (54-56 in fig. 5), wherein said offset voltage generator is configured to generate a temperature compensated offset voltage based on said thermal measurement (col. 3, lines 12-24); and

a summing element for adding said offset voltage to a reference voltage to produce a temperature compensated voltage (col. 4, lines 34-44).

APA, Romo and McCartney are analogous art because they are both from the same field of endeavor namely, driving devices for multi-layer display devices that are temperature dependent.

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the temperature sensor circuitry, taught by McCartney on the diffractive light device of APA and Romo.

The motivation for doing so would have been to provide a more accurate and reliable displayed image (McCartney; col. 2, lines 22-43).

**With respect to claim 3,** APA, McCartney and Romo disclose, the DLD of claim 2 (see above).

Neither APA nor McCartney expressly disclose, that the thermal effect comprises a change in spring force exerted by a flexure on a pixel plate.

Romo discloses, that a thermal effect comprises a change in the actuation force necessary to affect a change in the cantilever (col. 1, lines 46-48; col. 4, lines 23-27; col. 10, lines 1-4).

Romo, APA and McCartney are analogous art because they are both from the same field of endeavor namely, driving devices for multi-layer display devices that are temperature dependent.

At the time of the invention it would have been obvious to one of ordinary skill in the art to also compensate the DLD of APA and McCartney for a change in spring force as taught by Romo.

The motivation for doing so would have been to overcome temperature dependent instabilities (Romo; col. 1, lines 46-48).

**With respect to claim 5,** APA, Romo and McCartney disclose, the DLD of claim 2 (see above).

McCartney further discloses, wherein said offset voltage generator comprises:

a signal digitizer (54 in fig. 5) configured to digitize said thermal measurement;

a system controller (55 in fig. 5) communicatively coupled to said signal digitizer; and

a data storage device (55 in fig. 5) communicatively coupled to said system controller, wherein said data storage device contains a plurality of offset voltage value associated with said digitized thermal measurement (col. 3, lines 18-24).

**With respect to claim 6,** APA, Romo and McCartney disclose, the DLD of claim 2 (see above).

McCartney further discloses, wherein said offset voltage generator comprises:

a signal digitizer (54 in fig. 5) configured to digitize said thermal measurement;

a system controller (55 in fig. 5) communicatively coupled to said digitizer, said system controller configured to combine said digitized thermal measurement to a uncompensated digital color count (command word in fig. 5); and

a digital to analog converter (56 in fig. 5) communicatively coupled to said system controller, wherein said digital to analog converter is configured to convert said combined digital signal into a thermally compensated analog voltage.

**With respect to claim 7,** APA, Romo and McCartney disclose, the DLD of claim 2 (see above).

Neither APA nor Romo expressly disclose a variable voltage source communicatively coupled to said offset voltage generator.

McCartney further discloses, a variable voltage source (56-57 in fig. 5) communicatively coupled to said offset voltage generator, wherein said variable voltage source is configured to generate a temperature compensated offset voltage in response to a command signal received from said offset voltage generator (col. 4, lines 27-30).

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the variable voltage circuitry, taught by McCartney on the diffractive light device of APA and Romo.

The motivation for doing so would have been to provide a more accurate and reliable displayed image (McCartney; col. 2, lines 22-43).

**With respect to claim 8,** APA, Romo and McCartney disclose, the DLD of claim 2 (see above).

McCartney further discloses, wherein said summing element comprises a summing circuit, wherein said summing circuit is configured to combine said temperature compensated offset voltage with each of a plurality color specific voltages (col. 4, lines 34-44) to produce a temperature compensated voltage corresponding to each of a plurality of colors produced by pixel element of said DLD (col. 2, lines 41-43; col. 4, lines 42-44).

**With respect to claims 14-16 and 18-21,** these claims are seen as sufficiently equivalent to claims 2-3 and 5-8 to be rejected on the same merits shown above in the rejection of claims 2-3 and 5-8.

**With respect to claims 25-26 and 28-29,** these claims are seen as sufficiently equivalent to claims 2-3 and 5-8 to be rejected on the same merits shown above in the rejection of claims 2-3 and 5-8.

**With respect to claims 32-33 and 35-37,** these claims are seen as sufficiently equivalent to claims 2-3 and 5-8 to be rejected on the same merits shown above in the rejection of claims 2-3 and 5-8.

**With respect to claim 38,** APA, Romo and McCartney disclose, the DLD of claim 37 (see above).

McCartney further discloses, wherein said color voltage bias comprises a non-compensated voltage bias (co. 4, lines 30-33).

**With respect to claim 63,** APA and Romo disclose the MEMS of claim 12 (see above).

APA further discloses, an array of corresponding pixel and force plates (para. 23).

Neither APA nor Romo expressly disclose an offset voltage generator.

McCartney discloses, an offset voltage generator (54-56 in fig. 5), that applies an offset voltage based on said temperature measurement (col. 3, lines 12-24) to a global LCD bias signal used by the LCD electrodes.

APA, when combined with Romo and McCartney discloses, an offset voltage generator (McCartney; 54-56 in fig. 5), that applies an offset voltage based on said temperature measurement (McCartney; col. 3, lines 12-24) to a global MEMS bias signal used by the force plates.

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the temperature sensor circuitry, taught by McCartney on the diffractive light device of APA and Romo.

The motivation for doing so would have been to provide a more accurate and reliable displayed image (McCartney; col. 2, lines 22-43).

3. Claims 10-11, 23, 30 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (hereinafter APA) in view of Romo et al. (US 7,197,225) and further in view of Mori et al. (US 5,903,251).

**With respect to claim 10,** APA and Romo disclose, the DLD of claim 1 (see above).

Neither APA nor Romo expressly disclose, that the temperature sensor comprises a thermal sense resistor or a diode bandgap.

Mori discloses, a temperature sensor (5 in fig. 1), comprising a thermal sense resistor (thermistor; col. 4, line 18), thermally coupled to a display device (6 in fig. 1), wherein said temperature sensor is configured to produce a temperature compensated voltage in response to a thermal measurement performed by said temperature sensor (col. 4, lines 30-37).

APA, Romo and Mori are analogous art because they are both from the same field of endeavor namely, compensating electro-optical devices.

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the temperature sensor circuitry, taught by Mori on the diffractive light device of APA and Romo.

The motivation for doing so would have been to provide a more accurate and reliable displayed image even when temperature distribution is present in the display panel (Mori; col. 2, lines 35-38).

**With respect to claim 11,** APA, Romo and Mori disclose, the DLD of claim 10 (see above).

APA, when modified as taught by Romo and Mori, further discloses wherein said temperature sensor is configured to measure an average temperature of flexures in an array of DLDs (Mori; col. 6, lines 30-45).

**With respect to claims 23, 30 and 39,** these claims are seen as sufficiently equivalent to claims 10-11 to be rejected on the same merits shown above in the rejection of claims 10-11.

4. Claims 4, 17, 27 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (hereinafter APA) in view of Romo et al. (US 7,197,225) and McCartney et al. (US 5,088,806) and further in view of Naiki et al. (US 7,038,654).

**With respect to claim 4,** APA, Romo and McCartney disclose, the DLD of claim 2 (see above).

Neither Hung, Romo nor McCartney disclose, the inner circuitry of the offset voltage generator.

Naiki discloses, wherein an offset voltage generator comprises:

a buffer amplifier (OP2 in fig. 4; fig. 4 is a view of the temperature sensor circuit);

a low pass filter (13 in fig. 8) electrically coupled to said buffer amplifier (col. 11, lines 46-49); and

a scaler (14-15 in fig. 8) electrically coupled to said low pass filter (clear from fig. 8 that all the components are electrically coupled).

Naiki, Romo, APA and McCartney are analogous art because they are all from the same field of endeavor namely, driving devices for multi-layer display devices that are temperature dependent.

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the offset voltage circuitry taught by Naiki in the display device of APA, Romo and McCartney.

The motivation for doing so would have been a more accurate temperature sensor with only a negligible measurement error (Naiki; col. 2, lines 1-4).

**With respect to claims 17, 27 and 34**, APA, Romo and McCartney disclose, the DLD/MEMS of claims 16, 26 and 32 (see above).

These claims are seen as sufficiently equivalent to claim 4 to be rejected on the same merits shown above in the rejection of claim 4.

5. Claims 40, 42, 44-46, 49-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCartney et al. (US 5,088,806) in view of Applicant's Admitted Prior Art (hereinafter APA).

**With respect to claim 40,** McCartney discloses, a method of compensating for thermal effects in a LCD comprising:

measuring a temperature of said LCD (col. 4, lines 18-19);

generating a temperature compensated offset voltage (col. 4, lines 21-27) associated with an effect said temperature will have on said LCD (slow response time; col. 4, lines 9-15); and

producing a temperature compensated voltage on said LCD using said temperature compensated offset voltage, wherein applying said temperature compensated voltage to said LCD compensates for said thermal effects (col. 4, lines 27-30).

McCartney does not expressly disclose, compensating thermal effects in a DLD.

APA discloses a diffractive light device, which is affected by thermal effects (fig. 1).

APA and McCartney are analogous art because they are both directed to the same problem solving area, driving devices for multi-layer display devices that are temperature dependent.

At the time of the invention it would have been obvious to one of ordinary skill in the art to replace the LCD of McCartney with the DLD of APA for the well-known benefit of the increased contrast possible with DLD devices.

**With respect to claim 42,** APA and McCartney disclose, the method of claim 40 (see above).

McCartney further discloses, wherein said generating a temperature compensated offset voltage comprises:

providing said signal to an offset voltage generator (54-56 in fig. 5), wherein said offset voltage generator is configured to generate a temperature compensated offset voltage based on said signal (col. 3, lines 12-24).

**With respect to claim 44,** APA and McCartney disclose, the method of claim 42 (see above).

McCartney further discloses, wherein said offset voltage generator comprises:

a signal digitizer (54 in fig. 5) configured to digitize said thermal measurement;

a system controller (55 in fig. 5) communicatively coupled to said signal digitizer; and

a data storage device (55 in fig. 5) communicatively coupled to said system controller, wherein said data storage device contains a plurality of offset voltage value associated with said digitized thermal measurement (col. 3, lines 18-24).

**With respect to claim 45,** APA and McCartney disclose, the method of claim 42 (see above).

McCartney further discloses, wherein said offset voltage generator comprises:

a signal digitizer (54 in fig. 5) configured to digitize said thermal measurement;

a system controller (55 in fig. 5) communicatively coupled to said digitizer, said system controller configured to combine said digitized thermal measurement to a uncompensated digital color count (command word in fig. 5); and

a digital to analog converter (56 in fig. 5) communicatively coupled to said system controller, wherein said digital to analog converter is configured to convert said combined digital signal into a thermally compensated analog voltage.

**With respect to claim 46,** APA and McCartney disclose, the method of claim 40 (see above).

McCartney further discloses, wherein said measuring a temperature of said DLD comprises:

thermally coupling a thermal sensor (52 in fig. 3) to a LCD (clear from fig. 5 that the temp sensor is coupled to the LCD); and

sensing a temperature of said LCD (clearly the temperature sensor, senses the temperature of the LCD).

**With respect to claim 49,** APA and McCartney disclose, the method of claim 40 (see above).

McCartney further discloses, a summing circuit, wherein said summing circuit is configured to combine said temperature compensated offset voltage with a color voltage bias (col. 4, lines 34-44) to produce said temperature compensated voltage.

**With respect to claim 50,** McCartney discloses, a processor readable medium (55 in fig. 5) having instructions thereon that are executable by a processor for:

sensing a temperature change of a LCD (col. 4, lines 18-20); and

modifying a voltage provided to said LCD in response to said sensed temperature change (col. 4, lines 21-33).

McCartney does not expressly disclose, sensing temperature changes specifically in a DLD.

APA discloses a diffractive light device, which is affected by thermal effects (fig. 1).

APA and McCartney are analogous art because they are both directed to the same problem solving area, driving devices for multi-layer display devices that are temperature dependent.

At the time of the invention it would have been obvious to one of ordinary skill in the art to replace the LCD of McCartney with the DLD of APA for the well-known benefit of the increased contrast possible with DLD devices.

**With respect to claim 51,** APA and McCartney disclose, the processor readable medium of claim 50 (see above).

McCartney further discloses, wherein said modifying a voltage provided to said DLD comprises:

receiving a signal associated with said sensed temperature change (output of 54 in fig. 5); and

generating a temperature compensated offset voltage based on said signal (col. 4, lines 27-30).

**With respect to claim 52,** McCartney and APA disclose, the processor readable medium of claim 51 (see above).

McCartney further discloses, wherein said processor readable medium further has instructions thereon that are executable by a processor for:

digitizing said signal (54 in fig. 5);

providing said digitized signal to a data storage device (55 in fig. 5); and

receiving a temperature compensated offset voltage value from said data storage device (col. 3, lines 18-24).

**With respect to claim 53,** McCartney and APA disclose, the processor readable medium of claim 52 (see above).

McCartney further discloses, wherein said data storage device comprises a data lookup table (col. 4, lines 23-27).

**With respect to claim 54,** McCartney and APA disclose, the processor readable medium of claim 51 (see above).

McCartney further discloses, wherein said processor readable medium further has instructions thereon that are executable by a processor for:

digitizing said signal (54 in fig. 5);

combining said digitized signal with a digital color count (command word in fig. 5); and

converting said combined signal to an analog voltage (56 in fig. 5).

6. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over McCartney et al. (US 5,088,806) in view of Applicant's Admitted Prior Art (hereinafter APA) and further in view of Romo et al. (US 7,197,225).

**With respect to claim 41,** McCartney and APA disclose, the method of claim 40 (see above).

Neither APA nor McCartney expressly disclose, that the thermal effect comprises a change in spring force exerted by a flexure on a pixel plate.

Romo discloses, that a thermal effect comprises a change in the actuation force necessary to affect a change in the cantilever (col. 1, lines 46-48; col. 4, lines 23-27; col. 10, lines 1-4).

Romo, APA and McCartney are analogous art because they are both from the same field of endeavor namely, driving devices for multi-layer display devices that are temperature dependent.

At the time of the invention it would have been obvious to one of ordinary skill in the art to also compensate the DLD of APA and McCartney for a change in spring force as taught by Romo.

The motivation for doing so would have been to overcome temperature dependent instabilities (Romo; col. 1, lines 46-48).

7. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over McCartney et al. (US 5,088,806) in view of Applicant's Admitted Prior Art (hereinafter APA) and further in view of Naiki et al. (US 7,038,654).

**With respect to claim 43,** McCartney and APA disclose, the method of claim 42 (see above).

Neither APA nor McCartney disclose, a low pass filter.

Naiki discloses, wherein an offset voltage generator comprises:

a buffer amplifier (OP2 in fig. 4; fig. 4 is a view of the temperature sensor circuit);

a low pass filter (13 in fig. 10) electrically coupled to said buffer amplifier (col. 11, lines 46-49); and

a scaler (14-15 in fig. 8) electrically coupled to said low pass filter (clear from fig. 8 that all the components are electrically coupled).

Naiki, APA and McCartney are analogous art because they are all from the same field of endeavor namely, driving devices for multi-layer display devices that are temperature dependent.

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the offset voltage circuitry taught by Naiki in the display device of APA and McCartney.

The motivation for doing so would have been a more accurate temperature sensor with only a negligible measurement error (Naiki; col. 2, lines 1-4).

8. Claims 47-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCartney et al. (US 5,088,806) in view of Applicant's Admitted Prior Art (hereinafter APA) and further in view of Mori et al. (US 5,903,251).

**With respect to claim 47,** APA and McCartney disclose, the method of claim 46 (see above).

Neither APA nor McCartney expressly disclose what type of temperature sensor is used.

Mori further discloses, wherein said temperature sensor comprises a thermal sense resistor (thermistor; col. 4, line 18).

APA, McCartney and Mori are analogous art because they are both from the same field of endeavor namely, driving devices for multi-layer display devices.

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the temperature sensor circuitry, taught by Mori on the diffractive light device of APA and McCartney.

The motivation for doing so would have been to provide a more accurate and reliable displayed image even when temperature distribution is present in the display panel (Mori; col. 2, lines 35-38).

**With respect to claim 48,** APA and McCartney disclose, the method of claim 47 (see above).

Neither APA nor McCartney expressly disclose measuring an average temperature of an array of DLDs.

Mori further discloses, wherein said temperature sensor is configured to measure an average temperature of an array of pixels (col. 6, lines 30-45).

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the temperature sensor circuitry, taught by Mori on the diffractive light device of APA and McCartney.

The motivation for doing so would have been to provide a more accurate and reliable displayed image even when temperature distribution is present in the display panel (Mori; col. 2, lines 35-38).

**(10) Response to Argument**

Admitted Prior Art

The first and main issue on appeal is whether Applicants' figure 1 is available as admitted prior art for the purposes of rejection of the current claims. Applicants' present three details which they point to as evidence that figure 1 is not admitted prior art. These details are 1) the discussion of figure 1 is within the "Detailed Description" portion of the Appellant's specification, 2) figure 1 is described as an exemplary embodiment, and 3) figure 1 was not labeled as prior art.

Examiner does not refute these facts, however, these facts do not preclude a finding that figure 1 is prior art. There are additional identifiers that are more clear and convincing that figure 1 is indeed prior art.

First is the Applicant's own disclosure in paragraph 23 of the Specification which states in part that display devices, "such as that illustrated in Figure 1 have *traditionally* been used to produced desired image" [emphasis added].

Additionally the entire discussion from paragraphs 18-24 discusses the basics of Figure 1 and subsequently describes the problems that are associated with the Figure 1 configuration, including temperature induced color shift. This discussion of Figure 1, regardless of the section it is positioned under, seems to be a very clear description of the relevant prior art and the problems associated with it. All of the remaining parts of the Specification are directed to solving this problem that is associated with the Figure 1 device.

Applicants' additionally argue that Figure 1 "represented the foundational work and design of the Appellant upon which the issue of temperature variation has been

addressed in Appellant's specification" (Applicants' Appeal Brief, page 13), and in keeping with § 2129 of the MPEP is not available as prior art.

The Examiner has reviewed § 2129 of the MPEP and does not believe that Applicants have met their burden to show that Figure 1 is Applicants' "own work product" (MPEP § 2129). Applicants' have only disclosed that Figure 1 was a foundational work and design in addressing the temperature variation.

It should be additionally noted that in an Examiner Initiated Interview the Applicants' representative refused to further clarify the language to expressly describe Figure 1 as Applicants' own work. Therefore Figure 1 continues to be viewed as admitted prior art, even when considering § 2129 of the MPEP.

<u>Claim 1</u>

On pages 14-16 or the Applicants' Arguments, the Applicants traverse the rejection of claim 1 on two grounds. Specifically, Applicants argue that Romo and Figure 1 are not analogous art and additionally that Romo does not teach coupling a temperature sensor thermally to a flexure.

The Examiner must respectfully disagree. It has always been the Examiner's position that Figure 1 and Romo are analogous art because they are both from the same field of endeavor namely optical MEMs devices which operate utilizing electrostatic attraction. As such Romo and Figure 1 are seen as sufficiently analogous.

As to Applicants' argument that Romo does not teach "a temperature sensor thermally coupled to said flexure, without affecting movement of said flexure, and

outputting a thermal measurement indicative of a temperature of said flexure", this is also not seen as persuasive.

This argument is similar to many of the Applicants' arguments; in that, the Applicants' do not seem to completely grasp the nature of the combination. It is not necessary that a single reference disclose all of the limitations in a claim. What is required is that one of ordinary skill of the art when presented with the two pieces of prior art would have suggested that the artisan combine them in a manner to obviate all of the claim limitations. This requirement is more than satisfied by these two pieces of prior art. Romo discloses a device that is analogous too, and operates under the same physics properties as the device of Figure 1. Therefore it would seem obvious to incorporate the temperature sensor of Romo into the Figure 1 device. This combination will thus result in a device that satisfies all of the claim 1 limitations.

Claim 12

On pages 16-18 of the Applicants' Arguments, the Applicants traverse the rejection of claim 12 on the grounds of hindsight.

In response to Applicants' argument that the Examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a

reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Claims 24 and 31

On pages 18-19, the Applicants traverse the rejections of claims 24 and 31 on grounds identical to those discussed above regarding the rejection of claim 1. As above the combination of the two pieces of prior art is seen as sufficient to disclose all of the limitations of claims 24 and 31.

Claim 2

On pages 20-21 of the Appeal Brief, the Applicants' traverse the rejection of claim 2 arguing the McCartney art is non-analogous art and the display technology used in an LCD would not be combinable with the DLD of Figure 1.

The Examiner must again respectfully disagree. McCartney states that his invention relates "generally to display technology" (col. 1, lines 8-9). Furthermore the limitation of claim 2, which McCartney is relied on is merely non-display specific voltage generating circuitry. It is this circuitry and manner of offset voltage generation that McCartney is relied upon. The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Claims 3, 14, 25 and 33

On page 21, the Applicants traverse the rejection of claims 3, 14, 25 and 33. The Applicants argue that McCartney does not teach compensation for a change in spring force exerted on a pixel plate by a flexure.

McCartney was not cited to disclose such a limitation. It is the combination of Figure 1 and Romo that discloses such a limitation. In short Figure 1 teaches a pixel plate with spring force exerted on it by a flexure. Romo discloses a similarly situated device with a cantilever that requires compensation for a change in spring force. Thus the claim limitations are seen as taught by the combination of Figure 1, Romo and McCartney.

Claims 8, 21, 15, 16, 63

Applicants' traversals of claims 8, 21, 15, 16 and 63 are all arguments similar to those made in the above traversals of claims 1, 24 and 34 above. The same counter-arguments hold true and these rejections are additionally seen as proper.

Claim 11

On pages 23-24 of the Appeal Brief the Applicants argue that Mori does not teach a temperature configured to measure an average temperature of flexures in an array of DLDs.

The Examiner agrees that Mori does not teach all of the limitations of claim 11. Mori does teach the measuring of an average temperature over an entire display. It is when Figure 1, Romo and Mori are combined that the remaining limitations of claim 11 are disclosed.

Claim 4

On pages 24-25, the Applicants' argue that Naiki does not teach a low pass filter as required by claim 4. Applicants acknowledge that Naiki does disclose an averaging circuit, but argue that Naiki's use of an averaging circuit as a noise filter is not equivalent to a low pass filter.

The Examiner respectfully disagrees. Naiki expressly discloses that the averaging circuit functions as a noise filter (col. 11, lines 46-49). Additionally, it is well-known to those of ordinary skill in the art that for an averaging circuit to function as a noise filter it must inherently be acting equivalently to a low pass filter. US 6,847,737, for example, confirms that averaging filters are "essentially low pass filters" (col. 67, lines 27-28). As such Naiki's disclosure of a noise filtering averaging circuit is seen as sufficiently disclosing a low pass filter.

Claims 40, 50, 41, 42, 47, 48

On pages 26-28 of the Appeal Brief the Applicants' traverse the rejections of claims 40, 50, 41, 42, 47 and 48 on the same grounds discussed above.

As shown above the combinations are seen as sufficient and supported by the specifications of the cited prior art.

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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/William L Boddie/

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